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Nota di contenuto	Nanotubes -- Graphene and other 2-D materials -- Opportunities and challenges in quantum dots -- Advances in heterostructure metamaterials for solid-state energy conversion -- Self-forming templates and nanofabrication -- Towards precision and adaptive supramolecular materials -- Porous materials : recent developments -- Development of biomolecule integrated materials and their biological applications -- The colloidal glass transition -- Linear magnetoelectrics and multiferroics -- Phase transitions in materials -- Advances in electrode materials for sodium-ion batteries -- Supercapacitors based on graphene, borocarbonitrides and molybdenum sulphides -- Photovoltaics: materials and devices -- Thermoelectric energy conversion -- Generation of hydrogen by water splitting -- Thermochemical CO2 reduction -- Computational modelling of charge transport through molecular devices -- Predictive models of multi-scale behavior of materials : mechanistic versus machine learning schemes -- Computational materials design using DFT databases and descriptors -- Glasses and amorphous materials.
Sommario/riassunto	"Advances in the Chemistry and Physics of Materials is a compilation of topics on the recent developments in the areas of Materials Science. Materials Science has been a subject of major interest which has garnered significant attention over the years. Chemists and physicists have contributed extensively to this frontier research area and their synergistic efforts have led to the discovery of many new, exciting

materials involving novel functions. In the light of the growing importance of the field of Materials Science, and owing to the fact that it is a subject that holds a lot of promise, internationally renowned Materials Chemist Prof. C.N.R Rao along with his colleagues at the School of Advanced Materials, at JNCASR, have compiled the contents of this book to highlight and showcase the emerging trends in materials science. It touches upon topics spanning over nanomaterials and various other classes of energy materials for harvesting, storage and conversion. The relatively new and exciting range of materials such as supramolecular, soft and biomaterials have been introduced and elucidated, in the book. Special emphasis has been laid on the synthesis, phenomena and characterization of these kinds of materials. Theoretical and Computational Chemistry has played an important role in the growth of Materials Science as a discipline, and the book covers a special topical session on the theoretical efforts in materials research. The book, packed with theory and practical aspects in a crisp and concise manner, aims to take the reader on an intense scientific expedition. The compilation provides an insight into the chemistry and physics of materials and presents up-to-date status reports which would, undoubtedly, be useful to practitioners, teachers and students"

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